NCPTT 2010 ANNUAL REPORT

National Park Service
U.S. Department of the Interior

A Publication of the National Center for Preservation Technology and Training

www.ncptt.nps.gov

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Director's Note

Advancing a Sustainable Future for America's Cultural Heritage through Technology

In the following pages, we are pleased to share the Fiscal Year 2010 accomplishments of the National Center for Preservation Technology and Training (NCPTT). NCPTT was established by the 1992 Amendments to the National Historic Preservation Act (16 USC Part D) in response to a congressional study that called for the creation of a federally-funded think tank to advance the use of science and technology in all the fields related to Historic Preservation.

Every passing year brings greater demand for NCPTT's programs and services, and the necessity to increase productivity while resources remain limited. This year was no exception. NCPTT's staff contributed more than a 1,000 hours of work towards

Kirk Cordell
NCPTT Executive Director

mitigating the oil disaster in the Gulf of Mexico, drafting cultural resource protocols on behalf of the Trustees and providing onsite technical assistance to the State of Louisiana at historic Fort Livingston. In addition to new challenges, the year also brought new opportunities and the achievement of some of the National Center's long-term goals as well.

NCPTT's Sustainability and Preservation initiative, created under the leadership of board chair emeritus Robert Silman and the Friends of

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Research intern Stace Miller uses a laser instrument as part of NCPTT's study of methods for removing graffiti from stone-based cultural resources.

Director's Note, continued ...

NCPTT, placed the National Center at the forefront of the sustainability movement within the preservation community. Our partnership with the National Trust for Historic Preservation on the previous year's Pocantico symposium led to the publication of the "Pocantico Principles" and then to a day-long "greening historic buildings" meeting, the "Nashville Challenge," at the Trust's Annual Conference in the fall of 2009. Both events spawned a working group of private and public partners, the Sustainability and Preservation Task Force ("SpitFire"), that continues to push a sustainability agenda in multiple programs and agencies.

Also in the last fiscal year, the blue ribbon Second Century Commission recognized NCPTT as a key contributor to the future success of the National Park Service. The National Center met with the Commission's Cultural Resources committee in Natchitoches, and contributed a paper on "The Future of Preservation Technology" to the Commission's work.

NCPTT's Nationwide Cemetery Summit brought together experts from around the country in the fall of 2009, and became the most financially successful training event in our history. It was the crowning event in a multi-year series of cemetery conservation training programs that built a new constituency for the Center's work.

NCPTT also received attention from new audiences during the past year. Its leadership in social media brought remarkable recognition from content managers far beyond the preservation world, and continues to prove the viability of social media as a tool to reach professional audiences. Site visits ballooned in FY2010 following the conversion of the NCPTT website to an open source content management system called WordPress. The NCPTT site received over 1 million visits by more than 130,000 unique visitors in FY2010. Those visitors viewed over 6.4 million pages and downloaded literally tens of thousands of PDF files of research reports. The Center's Preservation Podcast series, the only one of its kind in the preservation field, added 16 new episodes that were downloaded nearly 15,000 times during the fiscal year.

The National Center reconvened its working group on landscape maintenance at Monticello this past summer, with historic landscape architects from the National Park Service, nonprofit historic sites, and a community college continuing work on a preservation curriculum for landscape maintenance. New tools and instruments that promise to revolutionize nondestructive evaluation are in development, and the design for a portable, handheld Eddy Current tester is already done. Portable survey and evaluation tools for iPhones and other handhelds are under development as well, with the first in a series of landscape apps and a phone-based version of Heritage Preservation's Emergency Response and Salvage Wheel nearing completion.

Altogether it was an exciting and challenging year at the National Center for Preservation Technology and Training. The caliber of the talent embodied in our staff continues to impress. And as always, we deeply appreciate the expertise and help of the PTT Board and the Friends of NCPTT as we forge new tools for the conservation of our nation's heritage.

Kirk Cordell

Executive Director
October 2010
Natchitoches, La.

Workshop instructor Adam Mena talks a participant through the removal of a failed rivet at the Preservation of Historic Iron and Steel Bridges Workshop. (Below) Instructor Roy Bathiff demonstrates techniques for metal identification with spark tests.

EXCELLENCE IN PRESERVATION TRAINING

NCPTT develops and conducts seminars and workshops nationwide on topics like sustainability and cemetery monument conservation. The National Center also promotes excellence in preservation by promoting external historic preservation training and education opportunities for professionals. Here are the training programs we presented in FY-2010:

Nationwide Cemetery Preservation Summit, Oct. 19-21, 2009, Nashville, Tenn.: The summit brought over 100 leading cemetery preservation experts from around the nation to address the various aspects of cemetery preservation, including planning, landscapes, archeology, documentation and materials research.

Movin' & Shakin': Advances in Seismic Retrofit, Nov. 2-3, 2009, Los Angeles, Calif.: Full-day workshop at Association for Preservation Technology annual meeting. Training addressed latest practices in seismic engineering.

Heritage Education Instruction, Nov. 9, 2009, NCPTT, Natchitoches, La.: College of Education methods students from Northwestern State University of Louisiana learned how to use cemeteries as an educational tool.

Limewash Seminar and Workshop, Nov. 17-18, 2009, Jacksonville, Fla.: Seminar and workshop held through a memorandum of understanding with Timucuan Ecological and Historic Preserve (TIMU). Participants learned how to prepare and apply a basic limewash.

Preservation of Historic Iron and Steel Bridges, March 8-10, 2010, Lansing, Mich.: Workshop sponsored through NCPTT's Grants program that focused on metal bridge construction and preservation.

Addressing Landscape Maintenance in Cemeteries, April 7, 2010: Webinar addressing landscape documentation, removing invasive plants, mowing and trimming, tree care, and replacing key features.

Green Preservation: LEED Exam Preparation Workshop, April 21-23, Santa Fe, N.M.: Workshop held in partnership with the Cultural Resources management Program for the NPS Intermountain Regional Office.

Eddy Currents for Conservation of Historic Metal, May 11, 2010, Milwaukee, Wisc.: Workshop held at the American Institute for Conservation annual conference.

An Interdisciplinary Approach to Preserving Wood in Historic Structures, May 23-25, Frank Lloyd Wright's Taliesin, Spring Green, Wisc.: An Association for Preservation Technology workshop sponsored through a cooperative agreement with NCPTT. The hands-on workshop addressed preservation philosophy, wood as a building material, documentation and assessment, engineering considerations, and repair options.

Cemetery Monument Care Basics Workshop, June 4, 2010, Crown Hill Cemetery, Indianapolis, Indiana: Topics included documentation, planning, condition assessments, and proper cleaning techniques.

LEED Historic Buildings Training, June 16-18, 2010, New Orleans, La.: Training held in partnership with the Louisiana National Guard and the National Guard Bureau. Training provided instruction on the LEED rating system and on strategies for greening historic buildings.

Masonry Conservation and Limewash Mortar Workshop, Aug. 1-7, 2010, Nantucket, Mass.: A hands-on workshop

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Creole craftsman Oswald Colson (left) demonstrates how to make bousillage, a traditional Creole building material consisting of mud and moss. The demonstration was for a video produced by NCPTT. The video is available at YouTube.com/ncptt.

hosted by the University of Florida Preservation Institute and NCPTT. Topics included assessment, site preparation, mortar removal, joint cleaning, filling, and dressing.

Preparation of Bousillage for Repair of Historic Structures Video: NCPTT and the NPS Historic Preservation Training Center partnered to create the video that documents the preparation, manufacture and application of the building material *bousillage*, which consists of moss and mud.

Lifting and Hoisting Grave Markers Video: This video focuses on safe techniques for lifting large grave markers using a hoist.

Staff Presentations:

National Center for Preservation Technology and Training, Oct. 29, 2009: Presented overview of NCPTT at the Louisiana Cultural Economy Summit: The Intersection of Culture and Commerce.

Fort Polk Heritage Days, Nov. 7, 2009, Fort Polk, La.: Presentation and exhibit on cemetery care.

National Park Service National Cemetery Summit, Dec. 16-17, 2009, Greenville, Tenn.: Presentation on NCPTT research into maintenance practices for cleaning headstones.

Shreveport Municipal Auditorium, Dec. 21, 2009, Shreveport, La.: Presentation of National Historic Landmark plaque for the Shreveport Municipal Auditorium to the City of Shreveport. The auditorium is the home of the 1950s-60s Louisiana Hayride.

Historic Preservation and Sustainability, Feb. 2, 2010, Baton Rouge, La.: Lecture at Louisiana State University School of Architecture.

Landscape Preservation Maintenance Curriculum, Feb. 22, 2010, Shepherdstown, W.V.: Presented progress on the landscape preservation maintenance curriculum project to the NPS Cultural Landscape Program.

Heritage at Risk, Feb. 25, 2010, New Orleans, La.: Panel presentation on natural and man-made threats to cultural resources at Building Resilience Workshop.

Conservation Scientist for a Day Workshop, March 12, 2010, NCPTT, Natchitoches, La.: Juniors from the Avoyelles, La. Public Charter School learned how to use science to study, understand, and conserve cultural heritage.

Effects of Acid Rain on Stone, March 25, 2010, NCPTT, Natchitoches, La.: Fifth graders from the Natchitoches Magnet School learned how our environment affects cultural heritage.

Use of Lasers in Conservation and Preservation, April 13, 2010, Natchitoches, La.: Lectures presented on the use of lasers in conservation and

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Francis Miller describes microgrout injection during a hands-on session at the Nationwide Cemetery Preservation Summit, Nashville, Tenn.

preservation to Northwestern State University of Louisiana's Masters in Heritage Resources program.

National Center for Preservation Technology and Training, April 15, 2010: Presented overview of NCPTT at Louisiana Trust for Historic Preservation Annual Conference.

Low Cost Eddy Current Analyzer for use in Conservation, April 15, 2010, Natchitoches, La.: Paper presented at the Northwestern State University of Louisiana Research Day.

Development of a Virtual Museum using 3D Scanning Techniques, April 15, 2010, Natchitoches, La.: Paper presented at the Northwestern State University of Louisiana Research Day.

Development of an iPhone App for Documentation and Assessment of Historic Trees, April 23, 2010, Albuquerque, N.M.: Presented and demonstrated current version of the iPhone app at Alliance for Historic Landscape Preservation meeting.

Effectiveness of Commercially-available Cleaners for Government Headstones in the Changing Environment, April 27, 2010, Portland, Ore.: Poster presented at the Department of the Interior's Conference on the Environment.

Air Pollution Interactions with Consolidated Stone, April 28, 2010, Portland, Ore.: Paper presented at the Department of the Interior's Conference on the Environment.

Techniques for Rapid documentation of Heritage Resources, April 28, 2010, Portland, Ore.: Panel presentation at the Department of the Interior's Conference on the Environment.

Proper Methods for Landscape Maintenance in a Historic Cemetery, May 4, 2010, Petersburg, Va.: Lecture presented at a joint National Park Service and National Cemetery Administration meeting.

Sustainable Preservation, May 6, 2010, Natchez, Miss.: Presentation at Mississippi Heritage Trust Annual Conference.

The Facts of Wood Window Replacement, May 7, 2010, Natchez, Miss.: Presentation at Mississippi Heritage Trust Annual Conference.

NCPTT and iPhone App for Documentation and Assessment of Historic Trees, May 11, 2010, Nevada City, Calif.: Presented overview of NCPTT and the iPhone app at the California National Historic Landmarks annual meeting for owners and stakeholders.

Gov 2.0 Expo, May 27, 2010, Washington, D.C.: Presented overview of NCPTT's collaborative social media efforts in the heritage preservation field.

"Greening" Your Historic Structure, Aug. 23, 2010, Natchez, Miss.: Presentation at NPS Southeast Regional Office National Historic Landmark Conference.

National Historic Landmark Condition Assessment Study, Aug. 24, 2010, Natchez, Miss.: Presentation at NPS Southeast Regional Office National Historic Landmark Conference.

EMERGING PRESERVATION TECHNOLOGIES

PTT GRANTS PROGRAM

NCPTT Grants

Find the full listing of grants and information on the program: www.ncptt.nps.gov/grants

NCPTT supports the development and transfer of technologies to the field of preservation through its annual Preservation Technology and Training Grants Program. The program funds projects that develop new technologies or adapt existing technologies to preserve cultural resources. In August 2010, NCPTT announced its 2011 call for proposals.

The deadline for submission to the program was Oct. 15, 2010. NCPTT received 34 completed proposals, with funding requests totaling more than $703,000. NCPTT expects to award about $250,000 in the 2011 grants cycle, pending availability of funds. Announcement of the grants should take place in March 2011. Grants are awarded competitively with a maximum award of $25,000 (including indirect costs). All grants require a one-to-one match of cash or in-kind services. The matching funds requirement allows NCPTT to effectively leverage its research funds.

2010 NCPTT Grants Program

Last March, NCPTT announced its 2010 grant awards to universities, nonprofit organizations, and federal, state, and local agencies. In all, 14 grants totaling $320,000 in federal funds were awarded from a pool of 41 complete applications. These grants leveraged matches of $426,000 in cash and in-kind services contributed by the grantees.

2010 NCPTT Grants

Improve Methods for Repairing Wooden Structural Beams in Bandolier Civilian Conservation Corps National Historic District: Staff members at Bandolier are researching an alternative to epoxy repairs to structural beams called "vigas" that run through the Pueblo Revival-style buildings.

Protecting Gullah Land and Community: A Locative Media Website for Tourism, Community Planning and Education: This project will create a locative media website that conveys the importance of land, place, and spatial organization to the Gullah, and the impact of impending development on their way of life.

Structural Health Monitoring of the Nation's Cultural Heritage: Researchers from Clemson University Department of Civil Engineering are researching and developing a best practices guide for preservationists on monitoring vibration responses to detect changes in the structural state of a building.

Creation of a Website and Online Community Forum for Osteoware, a Software Application for Human Skeleton Documentation: The Smithsonian Institution, National Museum of Natural History team released the Osteoware software program to the public for testing with a full release expected in spring 2011.

Molecular Characterization and Technical Study of Historic Aircraft Windows and Head Gear Using Portable Raman Spectroscopy: National Air and Space Museum researchers have selected 77 artifacts for analysis to determine changes in plastic over time.

Using Quantum Dots to Tag Consolidants to Determine Depth of Penetration: This project is designed to explore the use of nanoparticle markers on chemical consolidants to aid in establishing penetration depth.

Digital Recovery of Water-Damaged Manuscripts Using a Transportable Multispectral Imaging Laboratory: University of Mississippi researchers are developing a transportable multispectral imaging lab and field-testing it on water-damaged manuscripts.

Development of a Micro-fading Tester with Near-UV Capability for Nondestructive Evaluation of Color Stability on Cultural Property: Carnegie Mellon

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An instructor grinds a weld on an eyebar as part of the Lansing Community College hands-on workshop "Preservation of Historic Iron and Steel Bridges."

Greg Heyworth, a scholar at the University of Mississippi, studies a water-damaged manuscript using multispectral imaging.

A nautical archaeologist from the Lake Champlain Maritime Museum prepares to dive to a shipwreck as part of a study to assess handheld multibeam sonar imagery technology.

University researchers will analyze chromatic aberrations in the standard microfading tester optical system and establish a protocol to reproducibly include near-UV wavelengths.

Massachusetts Heritage Landscape Atlas: Massachusetts Department of Conservation and Recreation is managing the entry of community data and developing a database format for a heritage landscape atlas.

Historic Concrete and Masonry Assessment by the Air-coupled Impact-Echo Method: Pennsylvania State University is developing assessment techniques for historic concrete and masonry using air-coupled impact echo-methods, which do not require direct contact between the receiver and the material being evaluated.

Preservation Re-engineering Workshop: Finding Green Environmental Management in Vernacular Historic Buildings: On April 7-8, 2011, The Louisiana Landmarks Society will host a workshop that investigates approaches to removing 20th-century climate control systems in 19th-century structures and replacing them with more natural, sustainable, and "green" systems.

Preservation Protection of Historic Wooden Structures User Guide: U.S. Department of Agriculture, Forest Service, is developing a user guide and online tool detailing the latest methods to preserve historic wooden structures.

Materials Characterization Utilizing Advanced Spectral Imaging: Researchers at the Library of Congress are seeking to further materials characterization techniques by adding polarizing light and 3D fluorescence methods to multispectral imaging.

Test and Augment New Cultural Resource Spatial Data Standards to Make GIS more Useful to Cultural Resource Managers: Carlsbad Caverns National Park is evaluating new cultural resource spatial data standards that are used in Geographic Information Systems.

Xeroradiography Center Enhancements at the University of Arizona: Researchers are establishing a xeroradiograph imaging system at the University of Arizona that provides better imaging and contrast for studying the manufacture and assembly of archaeological artifacts and historically significant objects.

Creating a Preservation Masonry Training Manual for High School Age Students: Abyssinian Development Corporation is creating a manual for young adults to develop preservation masonry skills through a combination of hands-on experience and academic lessons.

Participants use a model to learn about roof load transfer at a workshop on preserving wood in historic structures held at Frank Lloyd Wright's Taliesin.

FORMING SUSTAINABLE ALLIANCES

ARCHITECTURE AND ENGINEERING

Architecture and Engineering Research

Download this Research @ www.ncptt.nps.gov

For the past several years, NCPTT has been working with partners to investigate the relationship between sustainability and historic preservation. The National Center has convened experts, undertaken research, and developed training that promotes historic preservation as an important component of sustainable development. Conservation of our existing built environment includes reusing buildings, improving their energy and environmental performance, and reinvesting in older and historic communities.

Sustainable Preservation

In 2008, the National Center began working with the Friends of NCPTT and the National Trust for Historic Preservation (NTHP) to convene experts to address sustainability and preservation. The group created the Pocantico Proclamation on Sustainability and Historic Preservation, which was followed in 2009 by the "Nashville Challenge," focusing on the impact of increased energy performance requirements, alternative energy sources, and other emerging green building practices on historic buildings. NCPTT is currently developing a sustainability and preservation research agenda for the Sustainability and Preservation Policy Task Force ("SpitFire"), the steering committee that grew out of the Pocantico and Nashville meetings.

The National Center is also participating in the sustainable preservation initiatives of the Advisory Council for Historic Preservation, the Environmental Protection Agency, and others. NCPTT is committed to collaborating with a wide variety of partners representing federal, state and local governments, nonprofit, research and educational organizations, among others, to define and develop the role of historic preservation in safeguarding historic resources in a sustainable manner.

Disaster Preparation

NCPTT is funding the development and testing of a Rapid Documentation Technique that uses geospatially-enabled digital video recording equipment to provide a quick survey tool that can be used for pre- and post- disaster planning and recovery and to document change over time. In collaboration with Barrett Kennedy of Louisiana State University, NCPTT staff presented this project at the Building Resilience Conference in New Orleans on Feb. 26, and at the DOI Conference on the Environment in Portland, Ore., April 26-30, 2010.

Working within the Cane River National Heritage Area, NCPTT is using the Rapid Documentation Technique to survey their cultural and natural landscapes. The current work represents the first large-scale application to a rural area. Italian architect Monica Chialvo is working on the project along with NCPTT. Chialvo's position is funded through a cooperative agreement with the United States Committee of the International Council on Monuments and Sites (US/ICOMOS) International Exchange Program. The National Center is working with US/ICOMOS to expand the program to include early and mid-career professionals.

NCPTT has also been working with US/ICOMOS to disseminate the organization's annual International Scientific Symposium proceedings. Interns from the Louisiana School for Math, Science, and the Arts digitized and uploaded symposium papers and presentations dating back to 1996. These documents

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Kirk Cordell removes mortar during the hands-on portion of the "Masonry Conservation and Traditional Lime Mortars" workshop at Nantucket.

Preservapedia is an open encyclopedia for conservation professionals.

are now available to the public at http://www.scribd.com/usicomos and through a searchable online database located at http://www.usicomos.org/symp/archive/docs.

Education and Training

Through an ongoing cooperative agreement, NCPTT has partnered with the Association for Preservation Technology (APT) to offer technical workshops. Movin' & Shakin': Advances in Seismic Retrofit was held Nov. 10-13, 2009, in Los Angeles. Principally developed for structural engineers and technically-oriented architects, this two-day workshop showcased the latest practices in seismic engineering. An Interdisciplinary Approach To Preserving Wood in Historic Structures was held May 23-25, 2010, at Frank Lloyd Wright's Taliesin near Spring Green, Wis., through a partnership with APT and Taliesin Preservation, Inc.

Another APT partnership workshop, Nondestructive Evaluation Methods for Historic Structures, was planned for Nov. 5-6, 2010, at the Presidio in San Francisco.

A three-day workshop on the preservation of historic iron and steel bridges was held in Lansing, Mich., from March 8-10, 2010, with partial funding coming from a grant from NCPTT. Techniques and technologies for restoring historic bridges were discussed during sessions covering electric arc welding, heat straightening, and hot riveting processes that were attended by a variety of interested trainees, including State Historic Preservation Office and Department of Transportation officials, engineers, general contractors, students, and historic bridge conservators.

In partnership with the University of Florida's Preservation Institute: Nantucket (PI:N), NCPTT offered a one-week workshop on masonry conservation and traditional lime mortars in Nantucket, Mass., from Aug. 2-6, 2010. Participants undertook masonry repairs on an early-19th-century structure associated with Nantucket's famed whaling industry. This hands-on workshop covered assessment of existing conditions, site preparation, removal of inappropriate mortar, and cleaning and repointing joints. The concept behind this workshop grew out of a visit by NCPTT staff to PI:N in the summer of 2009 to lecture on the National Center's work and sustainable preservation.

Preservapedia: A Preservation Wiki

NCPTT is sponsoring development of Preservapedia, a wiki-style encyclopedia for preservation professionals. So far interns and staff have generated over 300 articles on topics ranging from linoleum to landscapes. Among many exciting facets of this project, Preservapedia provides a forum where preservationists can share practical experience and exchange information about treatments and their effectiveness. It also aims to serve as a reference database of historic manufacturers, case law, and preservation organizations. As the project moves forward, NCPTT's Ed FitzGerald will work to publicize the encyclopedia and build an active user base.

Lab Research

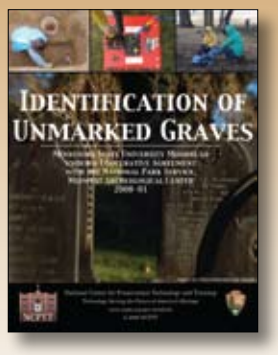
Kim Martin began working with the Architecture & Engineering Program as an intern in June 2010. Martin, a graduate of the Clemson University/College of Charleston preservation program, completed a comparative study of commercially available paint strippers over the summer and is now preparing samples for the next stage of NCPTT's research on traditional limewash finishes. The additional limewash testing will continue to build on NCPTT's original study comparing the performance of different types of lime available in the US and evaluating the effect of different numbers of coats on the longevity of the finish.

LOOKING BENEATH THE SURFACE

ARCHEOLOGY AND COLLECTIONS

Cultural Heritage Imaging (CHI) used a grant from NCPTT to hold a workshop on reflectance transformation imaging (RTI). Among those participating were (L-R) James Davis, Linda Olsen, Carla Schroer, Donna Gillette, Michael Ashley, Eric Blind, Mark Mudge, George Bevan, and Liz Clevenger. CHI is developing online RTI guides from the workshop.

Archeology and Collections Research



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Much of the information needed for effective archeological preservation is hard to see. For objects, sometimes that information is encased by layers of corrosion. For whole sites, sometimes it is buried beneath centuries of sediment. And sometimes that information is inaccessible simply because it has not been shared with others.

NCPTT is focused on looking "beneath the surface." This means using technology to see what was hidden, to see what preservation clues can be revealed, and, critically, how those discovery methods can be taught to other professionals.

Portable X-ray Flourescence

In the recent past, NCPTT has experimented with portable XRF devices to evaluate a variety of archeological collections. This has involved using a Tracer pXRF to characterize the elemental composition of 800-year-old copper artifacts from the Gahagan mound site in Louisiana. This will help the Louisiana State Exhibit Museum better understand the artifacts' conservation needs.

Working with some materials with a pXRF is relatively easy—glass or metals, for example. Working with textured, composite materials can be quite difficult. Another facet of experimentation with pXRF consisted of working with Bruker Corporation to design an appropriate method to assess heterogeneous materials like pottery. This is important for understanding what kinds of clays particular pots are made of, and what sorts of temper ingredients were added. That information helps researchers understand how to conserve the artifacts and it can lead to important discoveries about the artifacts' place of origin. The protocols have been devised, and the analysis of pottery excavated from colonial-period sites in Louisiana and the Caribbean—a "proof of concept" project—is underway.

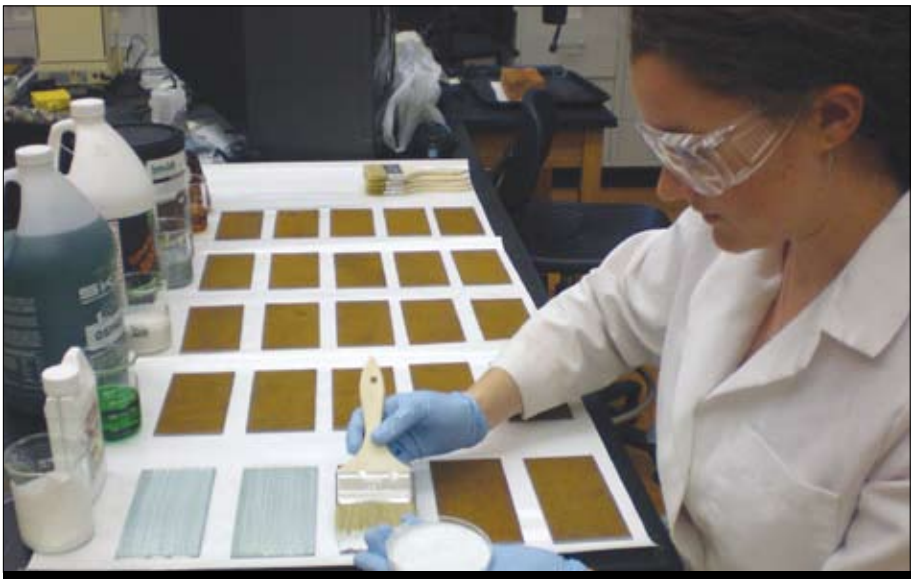
The Facets of Archeology

NCPTT grantees used geophysics to view the hidden past for preservation planning. Dr. Christopher Fennell of the University of Illinois concluded his research on the use of aerial thermal infrared to identify infrastructural features at historic-period archeological sites. Working at the 19th-century town of New Philadelphia—the first town platted and legally registered by an African American in the United States—Fennell found that the technique holds promise for detecting buried structural foundations.

Likewise, this year Cultural Heritage Imaging (CHI), a non-profit preservation group, used a grant from NCPTT to host a workshop on reflectance transformation imaging (RTI) in San Francisco. RTI uses low-cost digital imaging techniques to highlight surface features of art and objects that would otherwise be hard to see, if not impossible. One outcome of the workshop is a series of do-it-yourself RTI guides soon to be available online from CHI and NCPTT.

NCPTT recorded a series of podcasts on archeological topics, including the Cultural Heritage Imaging project. Other topics included drying waterlogged archeological wood, and using Second Life virtual worlds as an archeological tool.

Filling the Archeology and Collections Chief position is on hold pending a review of all the NPS Cultural Programs and the outcome of the FY2012 budget.



Anna Muto, Materials Conservation intern, applies a treatment to corroded iron lab samples as part of NCPTT's rust converter study.

NEW HORIZONS FOR RESEARCH

MATERIALS CONSERVATION

Materials Research

Download this Research @ www.ncptt.nps.gov

NCPTT's Materials Conservation Program is opening up the world of preservation to new technologies for conservation and preservation of historic cultural materials. In 2010, researchers at the National Center focused on exploring new materials and methods to solve today's most pressing cultural heritage problems.

Responding to Disaster

NCPTT is turning disaster into opportunities for discovery through technical assistance to the Gulf Coast in the wake of the Deep Water Horizon oil spill. NCPTT staff members dedicated more than 1,000 hours to oil spill response, which includes work with a multi-agency task force and technical working groups to develop baseline and injury assessment tools. Staff members are also visiting sites affected by oil and their work is influencing the way information is being collected and how it will be used in the future. Moreover, researchers are evaluating products to remove crude oil from masonry structures and archeological materials.

Beginning in the early days of the disaster, NCPTT developed recommendations and best practice guidance for protection of historic structures along the affected area. The document offered suggestions and general information regarding ways to protect structures from possible oil contamination and included a rapid assessment form for determining the condition of historic structures before and after exposure.

At the request of the Louisiana SHPO and Louisiana Office of State Parks, NCPTT staff members have visited Fort Livingston, Grand Terre Island, in Jefferson Parish, La. twice since June to assess the amount of oil contamination on the fort and to test cleaning methods on small portions of the structure. NCPTT partnered with the University of Texas–Austin to study the problem. Payal Vora, a graduate student in UT–Austin's historic preservation program, is evaluating the effectiveness and adverse effects of select cleaners on oiled brick.

Erin White, a Master of Arts in Heritage Resources student at Northwestern State University, also joined NCPTT's research team. Her work is evaluating effective methods of cleaning crude oil from archeological artifacts made of bone and shell. White will determine the procedure that provides the greatest level of cleaning with the least amount of damage to the object. The types of treatments she develops will likely take place in the laboratory, if and when objects are removed from sites.

Delivering Preservation Technologies

In response to growing public interest in preserving historic cemeteries, NCPTT convened the first Nationwide Cemetery Preservation Summit in Nashville, Tenn., on Oct. 19-21, 2009. The summit convened leading cemetery preservation experts who addressed aspects of cemetery preservation that included planning, landscapes, archaeology, documentation, and materials conservation. In all, the summit brought together more than 100 participants from across the nation to share ideas.

Among the participants at the Summit were representatives from 10 National Park Service-managed national cemeteries, who met face-to-face for the first time in a special session. Several outcomes resulted from NCPTT's special session on National Cemetery care. Most importantly, from this group, a task force

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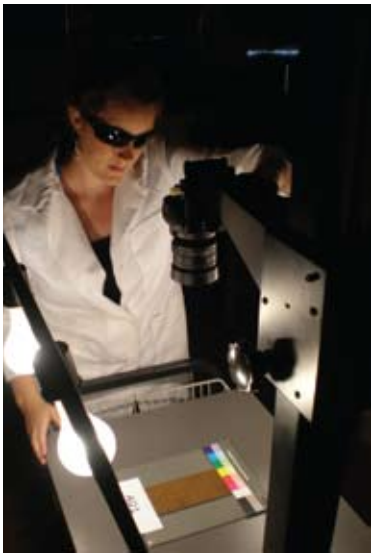

Intern Anna Muto photographs samples before treatment in NCPTT's study of rust converters for the protection of historic ironwork.

Polymer chemist Bruce Fu of Hybrid Plastics treats a marble headstone with a chemical consolident treatment. Hybrid Plastics is a partner with NCPTT on a grant by the National Science Foundation to study stone strengtheners.

emerged to develop new and improved NPS cemetery management policy.

In July 2010, NPS Director Jon Jarvis released Director's Order 61: National Cemetery Operations as guidance for managing 14 national cemeteries that are under NPS stewardship. The Order was the culmination of nearly a year's work by the NPS Cemetery Task Force. NCPTT continues to contribute to the task force as it develops the accompanying reference manual for the Order.

The National Park Service turned to NCPTT as the national expert on cemetery maintenance, providing training to the NPS Cemetery Task Force on a wide variety of cemetery maintenance issues, from managing landscapes to cleaning government-issued headstones.

NCPTT's expertise assists other federal agencies. In 2010, staff members continued to serve as technical advisers to the U.S. Army Corps of Engineers and Arlington National Cemetery on conservation of the Tomb of the Unknowns. Treatments to the Tomb were completed in June. Also, the National Center was instrumental in the development of novel treatments for use on marble monuments in the Historic Congressional Cemetery for the Department of Veterans Affairs. The National Center and its partners were honored with a District of Columbia Award for Excellence in Historic Preservation for the Congressional Cemetery Historic Monuments Restoration Project.

Beyond its cemetery work, NCPTT designed a new eddy current analyzer that uses the flow of electrons through metal to find information not readily visible to the eye. For example, the name and company of a Civil War union soldier was identified from a worn inscription inside a silver ring using NCPTT's system. Other uses of the eddy current analyzer may include determining the thickness of a coating on a metal surface and identifying types of metals found in cultural heritage artifacts and structures.

Also, the National Center initiated a research study into the effectiveness of rust converters for protection of historic ironwork. Corrosion of iron leads to damage and loss of integrity of many metal objects, from decorative ironwork to historic firearms. The study is comparing commercially-available and custom formulated chemical treatments to stabilize these metal objects.

"The NSF grant brings together a unique combination of expertise and resources to address fundamental challenges in stone conservation and advance the field of conservation and heritage science."

In 2010, NCPTT produced a training video on a traditional Louisiana construction method called *bousillage*, which uses mud and Spanish moss as a construction material. The National Center also developed a second training video on proper hoisting and lifting techniques for moving fallen or sunken cemetery monuments.

Partnering to Advance Research

NCPTT researchers are discovering new treatments for historic stone conservation with the help of Hybrid Plastics, the University of Southern Mississippi, and a grant from the National Science Foundation. The team is developing new stone strengtheners, also called consolidants, based on the latest advances in polymer science. The National Science Foundation has awarded the partnership a grant of $360,000 for the three-year project.

The NSF grant brings together a unique combination of expertise and resources to address fundamental challenges in stone conservation and advance the field of conservation and heritage science. Commercially-available consolidants are on the market, but increasing restrictions on environmental regulations make it harder to use these products in an outdoor environment. Additionally, some of the products work better on materials like sandstone than on limestone or marble.

Proposed new stone consolidants are based on the Polyhedral Oligomeric Silsesquioxane (POSS) molecule's ability to form a cage-like structure that provides strength and stability under a variety of environmental conditions. These polymers have properties that are similar to both ceramics and plastics. Depending on modifications made to these molecules, the resulting polymers can be used as adhesives, water repellents, or consolidants.

Intern Caitlin Oshida prepares granite samples for NCPTT's study about the effects of herbicides on historic stone and masonry.

GROWING SKILLS

HISTORIC LANDSCAPES

Historic Landscapes Research

Download this Research @ www.ncptt.nps.gov

Caring for historic landscapes requires skills beyond basic maintenance and horticultural practices. Understanding and applying these skills is essential to properly maintain our nation's most significant sites. NCPTT's historic landscapes program is advancing knowledge of site-sensitive landscape maintenance practices through research and training.

Herbicide Study

NCPTT's Historic Landscapes and Material Conservation programs are collaborating to study the effects of herbicides on historic stone and masonry. NCPTT intern Caitlin Oshida initiated the study in June. To inform the project's research design, Oshida surveyed National Park Service (NPS) facility managers. The survey focused on the types of herbicides typically used by the parks, how the herbicide is applied, and what types of masonry might be affected by herbicide application. Based on the results of the survey, the study will test the effects of Roundup® and Garlon 4® herbicides on historic brick, limestone, granite, and concrete. Caitlin will continue the project as her thesis topic for graduate work in the University of Georgia's historic preservation program.

Historic Landscapes Roundtable

Following a meeting held last fall at Hampton National Historic Site, NCPTT and the Olmsted Center for Landscape Preservation (OCLP) partnered to host a roundtable to discuss creation of an historic landscape preservation maintenance curriculum. This year's meeting was held at Monticello's Robert H. Smith International Center for Jefferson Studies, near Charlottesville, Va.

Participants included NPS and non-NPS site managers, maintenance supervisors, landscape architects, and educators. This year's meeting focused on identifying core preservation maintenance practice training needs for field staff. Core universal skills were identified: condition assessment, application of historic maintenance techniques, managing for character, and resource protection from predictable impacts. Next steps include lesson plan creation for each of the four universal skills and a survey to confirm anecdotal evidence that landscape preservation maintenance skills are in demand.

Training

At the request of Cane River Creole National Historical Park (CARI), NCPTT is creating a training video that addresses landscape maintenance practices at historic sites. The video focuses on how to maintain the landscape without damaging historic built features and trees. Topics covered include use of mulch, lawn mowers, string trimmers, and herbicides. Although primarily filmed at CARI, techniques included in the video are applicable to many historic sites.

The historic landscapes program and the materials conservation program also partnered to live-stream the lecture "Addressing Landscape Maintenance in Cemeteries" on April 8, 2010. The one-hour webinar provided an overview of landscape maintenance issues and their impact on cemetery historic resources. Topics included landscape documentation, replacing key features, removing invasive plants, mowing and trimming, tree care, and addressing conflicts between historic vegetation and built features. The webinar is downloadable from the NCPTT website.

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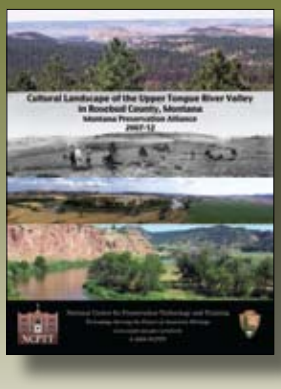
NCPTT research assistant Stephanie Nelson films a video about historic landscape maintenance at Cane River Creole National Historical Park.

Historic Landscapes Research



Download this Research @ www.ncptt.nps.gov

NCPTT partnered with the OCLP and the George Washington Birthplace National Monument (GEWA) to plan a three-day historic tree preservation workshop in Fredericksburg, Va., Nov. 30 – Dec. 2, 2010. The workshop is designed for landscape managers, maintenance staff, and volunteers. Workshop topics include tree biology and structure, condition assessment, methods to sustain tree health and stability, tree documentation and dating methods, changing maintenance practices as trees age and tree removal and replacement.

iPhone App Development

NCPTT is also developing an iPhone app that will allow field staff at historic sites to inventory, perform condition assessments, and recommend treatments for individual trees. This app is the first of a host of apps NCPTT anticipates developing. The combined apps will result in a landscape survey project that will allow sites to record landscape feature information in the field. Future apps may include buildings and structures, archeological sites, roads and trails, and additional vegetation types.

Charlie Pepper from the Olmsted Center for Landscape Preservation leads a discussion at the historic landscape preservation maintenance roundtable.

Government VIDEO

▶NEWS ▶SALUTE ▶DEPARTMENTS ▶COLUMNS ▶AUDIO ▶BLOGS ▶FORUMS ▶JOBS

Website of the Week: NPS National Center for Preservation Technology and Training

STORY TOOLBAR ➤ email print ShareThis rss

The National Park Service has a bunch of tough tasks. In addition to protecting grizzly bears from tourists, NPS gets to preserve and protect historic objects, landmarks and infrastructure from aging bridges to the Statue of Liberty. It has to prepare objects for life in the 21st century while preserving their authenticity and historic value.

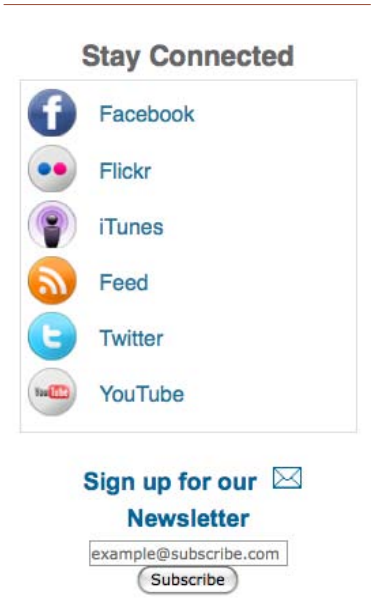
In 1992, Congress created the National Center for Preservation Technology and Training. NCPTT advances the application of science and technology to historic preservation, working in archeology, architecture, landscape architecture and materials conservation.

NCPTT training courses show participants the most

Government Video Magazine named NCPTT its "Website of the Week" in December 2009.

CONNECTING PRESERVATION IN THE OFFICE AND THE FIELD

PUBLIC OUTREACH & INFORMATION TECHNOLOGY



As the web continues to profoundly change the way the world communicates, NCPTT is developing technologies and online content that help preservation professionals advance the future of America's heritage at the office, or in the field.

Connecting and Interacting through Livestreaming

One of the ways NCPTT is reaching out to its audience and reducing costs is with live streaming technology. NCPTT held its first live webinar on April 7 at its headquarters in Natchitoches, La. More than 120 participants from around the world viewed the presentation "Addressing Landscape Maintenance in Cemeteries" on USTREAM.tv. NCPTT's Jason Church hosted the discussion. Participants were invited to ask questions through the USTREAM chatroom. The full video from the webinar is available for viewing on the National Center's website.

Following the success of the landscape webinar, NCPTT purchased a TriCaster, which is computer equipment that will empower the National Center to create professional broadcasts on par with broadcast networks. The device is portable enough that it can be used at any of NCPTT's training locations with an internet connection. The National Center can also partner with other preservation organizations to live stream events. NCPTT has long been a host site for the Technology Enhanced Learning (TEL) Network, a satellite-based learning system administered by the National Park Service to stream training internally. During FY2010, 33 personnel took part in 13 programs at NCPTT. Some of those participating were staff from the Cane River Creole National Historical Park and the Cane River National Heritage Area Commission and staff.

Reaching out to deliver information instantly and interactively is a capability few preservation organizations share. NCPTT supported this goal throughout 2010 by continuing to build its presence on popular social networks, including Facebook, Twitter, YouTube and Flickr. It recently published the 26th episode of the Preservation Technology Podcast, which features discussions with thought leaders who are using technology in preservation. Episodes of the podcast have been downloaded a total of 15,000 times.

Life is mobile. So are we.

Recognizing that the future is indeed "mobile," NCPTT's media—from podcasts to blog posts—have been optimized for both web and mobile access from the beginning. Now the National Center is taking its investment in mobile technology a step further by developing apps for preservation professionals. Features like GPS, cameras and long battery life make the popular distribution model of the Apple App Store ideally suited for historic preservation applications. Archeologists are already using iOS devices in the field with general purpose applications. NCPTT's goal is to provide a suite of simple mobile apps and website plug-ins to help preservation professionals capture and analyze data in the field. A group of people with iOS devices can spread out to quickly document cultural resources impacted in a disaster, then converge to synchronize data amongst themselves wirelessly in the field. While mobile development projects are currently focused on Apple's iOS platform, future plans include porting apps to the Android and Blackberry platforms.

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Tree Assessments (iOS app)

Emergency Response and Salvage (iOS app)

Tree Assessment: NCPTT is currently developing an app that allows arborists and other landscape professionals to document historic trees, inventory features, assess conditions, and provide treatment recommendations. Data can be collected for metrics like caliper, height, tree form, crown, trunk, root flare, roots, overall condition, and other data such as GPS location, photographs of specific areas of interest, voice notes, and text notes. The application is approximately 60 percent complete. NCPTT is using its historic landscapes training workshops as opportunities to field test the apps.

ERS—Emergency Response and Salvage App: Heritage Preservation asked NCPTT to look into developing an iPhone/iPod Touch app based on the Emergency Response and Salvage Wheel. This cardboard guide provides information to help people salvage collections damaged by disasters. Consolidating this guide into an app brings this information to the fingertips of both collections managers and the general public. The prototype for this app was developed very quickly and is nearly complete.

Vulnerability: David W. Morgan, former NCPTT Archeology and Collections chief, and current director of the NPS Southeast Archeological Center (SEAC), is collaborating with NCPTT webmaster Sean Clifford to develop an iPhone app to assess vulnerability to looting, vandalism, and other incidents. This project is based on vulnerability assessment work done with the Louisiana Army National Guard and current paper-based assessment requirements for federally managed archeological sites.

Worldwide Web Recognition

In 2009, NCPTT converted its website to WordPress, a user-friendly open source content management system. All NCPTT staff members are able to easily edit and publish to the NCPTT website. In FY2010, the NCPTT website had over one million visits by over 130,000 unique visitors who viewed over 6.4 million pages and downloaded tens of thousands of PDF publications. While 84 percent of visitors are from the United States, NCPTT's site and publications continue to have international appeal. Historic American Timber Joinery: A Graphic Guide (2008-06) has been downloaded by over 1,500 people. This and other timber joinery products have received a great deal of attention from Russian preservation forums dedicated to preserving historic 19th-century homes.

Government Video Magazine named NCPTT its "Website of the Week" in December 2009, citing the National Center's use of "photos, videos, podcasts and every other modern method to demonstrate [its research]." Additionally, tech blog Honeytech named NCPTT number four on its international list of "Top 10 Government Sites Powered by WordPress."

Top 5 NCPTT Website Downloads

NCPTT's website provides a central location to search for preservation products, and most products are downloaded electronically. The National Center's most-downloaded products include the following:

- Building Dry Stone Retaining Walls (2002-06) Video: 1,425 downloads
- Historic American Timber Joinery - A graphic guide (2004-08) PDF: 1,229 downloads
- Testing the Energy Performance of Wood Windows in Cold Climates (1996-08) PDF: 822 downloads
- Walls of Stone: How to Build Drystone Walls and Rock Fences (1996-01) Video: 736 downloads
- Digital Image Analysis of Petrographic Thin Sections in Conservation Research (2004-01) PDF: 735 downloads

Additionally, 243 products were requested in hard copy over the last year and mailed to the public.

In-office Computer Systems

With its increasingly public role on the web, NCPTT strives to make its in-office computer systems as secure and efficient as possible. This year the IT staff began implementing two-factor authentication on the office workstations and laptops. Two-factor authentication is a security process in which the employee's identification card can be used with a pre-assigned PIN code to log on to Interior Department and NPS applications and networks through a Virtual Private Network. NCPTT is also looking into methods that will allow its IT staff to authenticate and reset staff ID cards on-site. Currently staff have to travel an hour or more to have administrative ID tasks performed.

"NCPTT Notes" e-newsletter goes out bi-monthly to more than 4,000 people who have subscribed via the NCPTT website.

NCPTT PUBLICATIONS & MEDIA PRODUCED IN 2010

Research/Technical Publications

1. Protecting Historic Structures from Oil Contamination, Carol Chin, NCPTT
2. Development of a Web-accessible Database of the Comparative Plant Fiber Collection, Kathryn Jakes, Ohio State University
3. What's Out There: An Interactive Catalog of Designed American Cultural Landscapes, Nancy Slade, Cultural Landscape Foundation
4. Community Connections Heritage Education Activity Workbook, Eileen Engle, Our Community Voices
5. Field Report on Fort Livingston at Grand Terre Island, Carol Chin and Jason Church, NCPTT
6. Sustainable Fiber Reinforced Mortar Mixtures for the Preservation of Unreinforced Masonry Architectural Heritage, Ece Erdogmus, University of Nebraska-Lincoln
7. Preservation of Historic Bridges and Other Metal Structures Workshop, Vernon Mesler, Lansing Community College
8. Breaking the Barrier: A Model Program for Preservation Trades Education & Training Utilizing Satellite & Simulcast Distance Learning Technologies, Joanna Morris and Jane Wooley, Jefferson Community College and Dry Stone Conservancy
9. A Comprehensive Training Program for 3D Digital Rock Art Documentation and Preservation, Carla Schroer, Cultural Heritage Imaging
10. Reflectance Transformation Imaging: Guide to Highlight Image Capture, Carla Schroer, Cultural Heritage Imaging
11. FAIC Conservation Catalog Wiki, Eryl Wentworth, Eric Pourchot, Brett Rodgers, Paul Messier, Luisa Casella, and James Cocks, Foundation of the American Institute for Conservation of Historic and Artistic Works

NCPTT Videos

1. The Historic Building Material Bousillage
2. Lifting and Hoisting Stone Gravemarkers
3. Cemetery Landscape Maintenance Webinar
4. Cemetery Preservation Summit (live-streamed and produced 30 segments)
5. Preservation of Historic Bridges and Other Metal Structures Workshop DVD
6. Documenting and rehousing the Milwaukee Historical Society's Early Photography Collection (with AIC)
7. NCPTT Video Sampler (DVD)

Promotional Literature

1. General Fact Sheet
2. Emerging Programs
3. Training Calendar
4. Working with SHPOs/THPOs
5. Research Solutions for National Parks
6. Research, Training & Products (illustrated guide)
7. Historic Landscapes Brochure
8. Grants Call for Proposals

Preservation Technology Podcast

1. Barry Stiefel on the sustainability of historic preservation
2. Aaron Lubeck on the book "Green Restorations"
3. NCPTT interns talk about their summer research
4. Tony Rajer on folk art conservation and the Rock Garden in Chandigarh, India
5. Moss Rudley on the role of HTPC in the National Park Service
6. Dennis Pogue on the preservation of Mount Vernon National Historic Landmark
7. Vern Mesler on the preservation of iron and steel in bridges and metal structures
8. Bernard Frischer on 3D scanning, Rome Reborn and virtual ancient worlds on Google Earth
9. Kit Arrington on the digital preservation of documents at the Library of Congress
10. How the internet saved an historic tree
11. Technologies for drying archeological wood from shipwrecks
12. 3D digital rock art documentation and preservation
13. Tracy Nelson on green design and the economy of sustainability
14. Curriculum development for preservation landscape maintenance
15. Tom Jones on urban ecology
16. Robert Melnick on the influence of climate change on landscapes
17. NCPTT Podcast Sampler (CD)

Students from Avoyelles Public Charter School examine archeological pottery under a stereo microscope while visiting NCPTT in March.

INSTILLING HERITAGE VALUES

EDUCATIONAL RESOURCES

Educational Resources Research

Download this Research @ www.ncptt.nps.gov

Aside from its role as a trainer and convener of preservation professionals, NCPTT inspires general audiences with the message that everyone has a role to play in protecting cultural heritage.

Public Preservation Events at NCPTT's Lee H. Nelson Hall

The National Center hosts regular activities for the public at its headquarters in Natchitoches, La. In June, it held a half-day preservation fair for the local community. Staff members guided participants in demonstrations and hands-on activities related to historic window preservation, grave marker cleaning, tree care and replacement, and bousillage creation and repair. In August, NCPTT partnered with the Cane River Creole National Historical Park and the Cane River National Heritage Area to host the annual Preservation in Your Community (PIYC) Program. Interns from the partnering organizations presented posters about their preservation research in a relaxed, come-and-go atmosphere. Now in its tenth year, the event has attracted increasingly larger audiences from the community and throughout Louisiana.

Community Connections Heritage Education Activity Book

Funded by a grant from NCPTT, Community Connections is an innovative, multi-tiered set of activities that involves students, teachers, families and schools working together to learn about the places in which they live. These activities secure a deeper understanding and appreciation of heritage that can be integrated into several areas of the curriculum to offer unique and varied after-school and camp program ideas.

Preservation is Elementary

Heritage connections were made at NCPTT in March as school field trips collectively brought nearly 80 students to Lee H. Nelson Hall. The National Center hosted fifth-graders to study the effects of acid rain on cultural heritage made of stone. Students from Natchitoches Magnet School learned about the way in which our environment affects cultural heritage. Also in March, NCPTT held a five-hour workshop focusing on the use of science to study, understand and conserve cultural heritage for 34 students from Avoyelles Public Charter School.

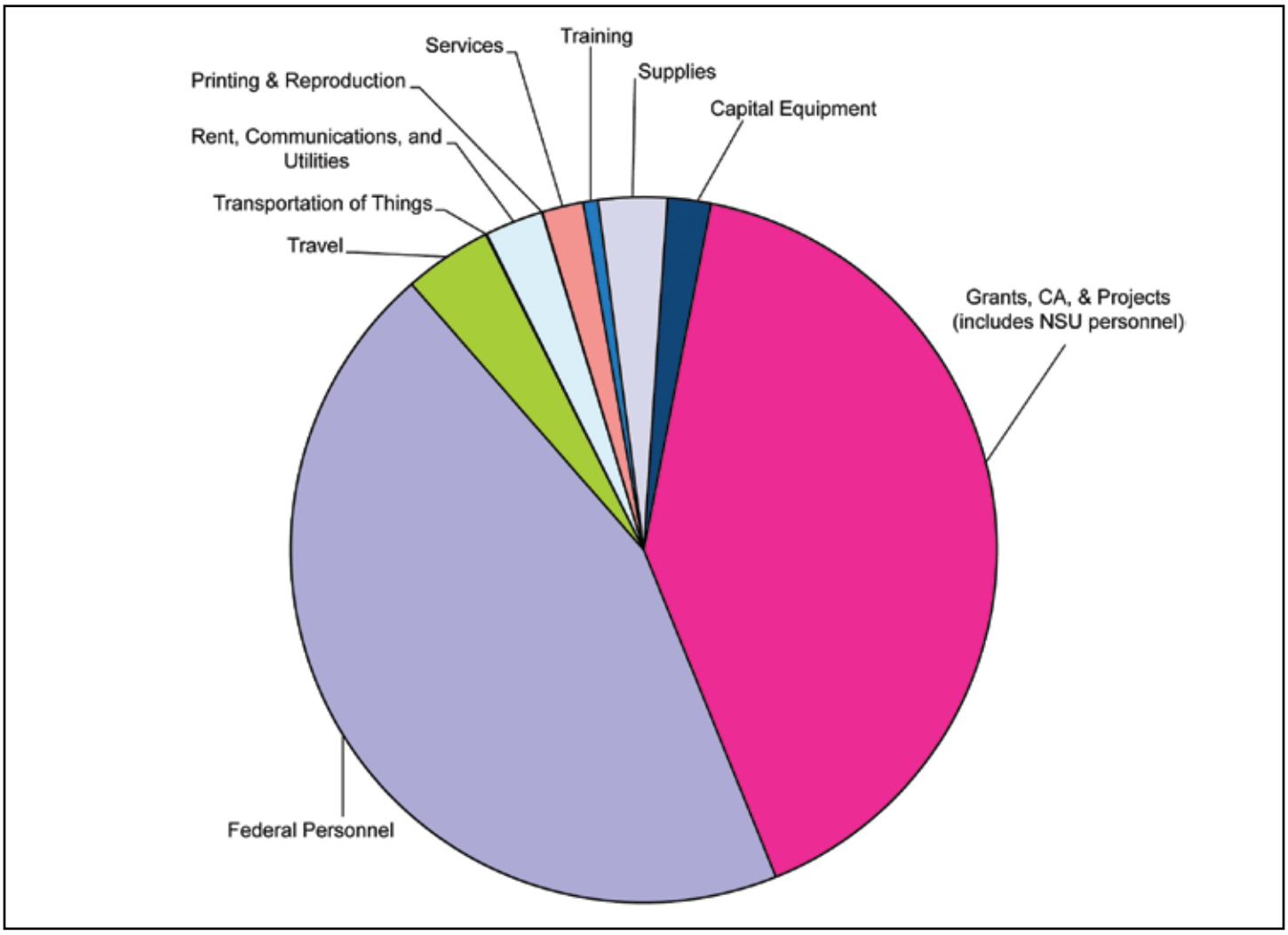
High Tech and Higher Education Staff from the National Center lectured in a variety of higher education settings during FY-2010, including Grambling State University and Northwestern State University (NSU). NCPTT also hosted a two-hour course with the NSU College of Education on using heritage education to teach across the curriculum.

Edouard Ferrell discovers that heritage preservation can be dirty work while learning how to make mud-based building material bousillage during NCPTT's Preservation Fair.

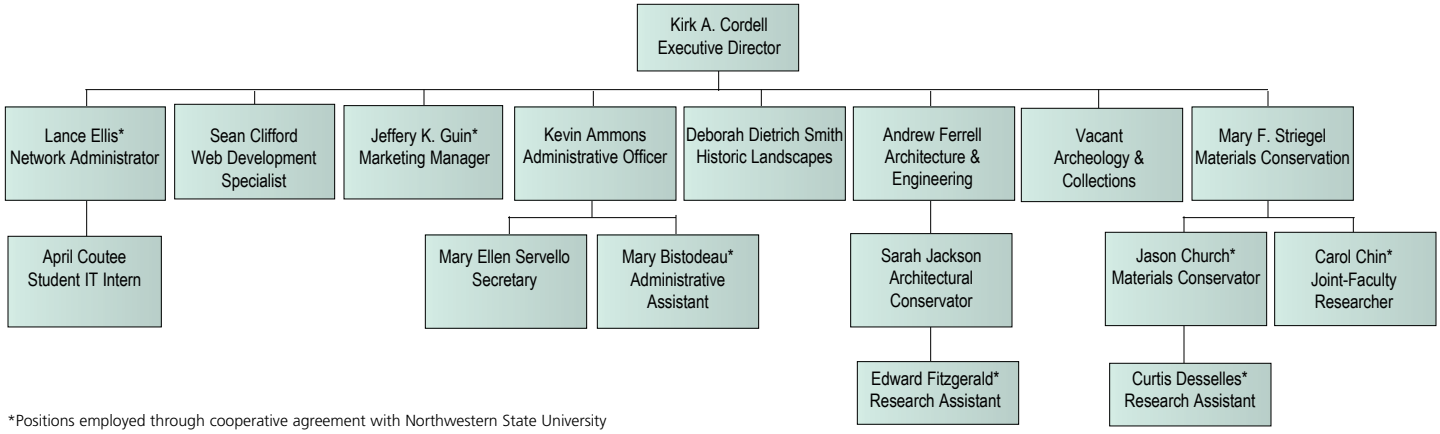
BUDGET & ADMINISTRATION

LEVERAGING RESOURCES THROUGH PARTNERSHIPS

Though relatively small in size, NCPTT leverages its resources through partnerships and spending that is closely tied to its mission. The chart on this page breaks down NCPTT's budget for FY-2010:



2010 ORGANIZATIONAL CHART



*Positions employed through cooperative agreement with Northwestern State University

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Mary Bistodeau	Receptionist
Carol Chin	NCPTT/NSU Joint Faculty
Jason Church	Materials Conservator
Sean Clifford	Web Developer
Curtis Desselles	Research Assistant
Lance Ellis	I.T. Administrator
Andy Ferrell	Chief, Architecture and Engineering
Ed Fitzgerald	Research Assistant
Jeff Guin	Marketing Manager
Sarah Jackson	Materials Research Assistant
Mary Servello	Executive Secretary
Debbie Smith	Chief, Historic Landscapes
Mary F. Striegel	Chief, Materials Conservation
Vacant Position	Chief, Archeology and Collections

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Stephanie Toothman	*Associate Director, Cultural Resources*
Jon C. Smith	*Assistant Associate Director, Heritage Preservation Assistance Programs*

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NCPTT
National Center for Preservation Technology and Training

The NCPTT Annual Report is published by the National Park Service's National Center for Preservation Technology and Training.

The purpose of this publication is to convey NCPTT's Mission, which is to advance the use of science and technology in the field of historic preservation including archeology, architecture, landscape architecture and materials conservation. The Center accomplishes its mission through training, education, research, technology transfer and partnerships.

NCPTT's mail list is subject to request under the Freedom of Information Act. Persons or organizations not wanting to have mail list information disclosed should unsubscribe.

For more information, contact us at ncptt@nps.gov or call 318-356-7444.